

AMENDMENTS TO THE CLAIMS

This Listing of Claims will replace all prior versions and listings of claims in this application.

Listing of Claims:

1.-29. (Cancelled)

30. (Currently Amended) A process for ~~secured distribution of video sequences according to a digital stream format stemming from an encoding based on a processing by wavelets comprising frames comprising blocks containing coefficients of wavelets describing the visual elements, comprising:~~

processing analyzing the a digital stream, formed of video sequences in a digital stream format derived from encoding using wavelets, prior to transmission to client equipment to generate a modified main digital stream by deletion and replacement of selected information in the coding the original digital stream, the modified digital stream and having the format of the original digital stream format, and to generate complementary information of any format comprising the digital information coding the original using the selected information stream, the complementary information being and suitable for permitting reconstruction of the modified frames digital stream using the modified digital stream; and

transmitting the modified main digital stream and the complementary information separately from a server to the client-addressed equipment.

31. (Currently Amended) The process according to claim 30, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and

wherein the processing comprises scrambling including comprises modifying the coefficients of wavelets belonging to at least one temporal subband resulting from temporal analysis.

32. (Currently Amended) The process according to claim 30, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and

wherein the processing comprises scrambling ~~comprises including~~ modifying the wavelet coefficients ~~belonging to~~ at least one spatial subband resulting from spatial analysis of a temporal subband.

33. (Currently Amended) The process according to claim 30, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and

wherein the processing comprises scrambling ~~comprises including~~ modifying the coefficients of wavelets belonging to at least one temporal subband resulting from temporal analysis of one spatial subband.

34. (Currently Amended) The process according to claim 30, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and

further comprising modifying wavelet coefficients ~~the wavelet coefficients to be modified~~ are at least randomly selected and/or defined a priori.

35. (Currently Amended) The process according to claim 30, wherein the processing comprises scrambling, wherein parameters for the scrambling are a function of properties of at least one of temporal scalability, and/or spatial scalability, and/or qualitative scalability, and/or temporal scalability, transmission rate scalability and/or scalability by regions of interest offered by digital streams generated by wavelet-based coders.

36. (Currently Amended) The process according to claim 30, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and

further comprising determining -visual intensity of degradation of the video sequences ~~is determined~~ by a quantity of modified wavelet coefficients in each at least one spatial-temporal subband.

37. (Currently Amended) The process according to claim 30, further comprising determining ~~wherein visual intensity of degradation of the intensity of visual degradation of the~~ video sequences decoded from the modified ~~main digital~~ stream ~~as~~ is a function of a position in the original digital stream of the modified data, which data represents, according to its positions, values quantified according to different accuracies of wavelet coefficients belonging to a spatial-temporal subband.

38. (Currently Amended) The process according to claim 30, further comprising determining visual intensity of degradation of the ~~wherein intensity of visual degradation of the video~~ sequences decoded from the modified ~~main digital~~ stream ~~is determined~~ according to which quality layer of modified wavelet coefficients ~~they~~ the video sequences belong to in each at least one spatial-temporal subband.

39. (Currently Amended) The process according to claim 30, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and

further comprising modifying ~~modification of~~ wavelet coefficients ~~is carried out directly~~ in a binary stream.

40. (Currently Amended) The process according to claim ~~30~~39, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and

further comprising modifying ~~modification of~~ wavelet coefficients ~~is carried out with a~~ partial decoding.

41. (Currently Amended) The process according to claim ~~30~~39, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and

~~modification of~~ further comprising modifying wavelet coefficients ~~is carried out during~~ coding or by ~~carrying out a~~ decoding then a complete re-encoding.

42. (Currently Amended) The process according to claim 30, wherein a size of the modified main digital stream is strictly identical to the size of the original digital video stream.

43. (Currently Amended) The process according to claim 30, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and

further comprising substituting ~~substitution of~~ the wavelet coefficients ~~is carried out with~~ random or calculated values.

44. (Currently Amended) The process according to claim 30, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and

further comprising determining a duration of visual scrambling obtained in a group of frames ~~is determined as a function of a temporal subband to which modified wavelet coefficients~~ belong.

45. (Currently Amended) The process according to claim 30, further comprising spatially limiting wherein visual scrambling obtained in a group of frames ~~is limited spatially~~ in a region of interest of ~~each~~ at least one frame.

46. (Currently Amended) The process according to claim 30, further comprising organizing wherein the complementary information ~~is organized~~ in layers of at least one of temporal, ~~and/or~~ spatial, ~~and/or~~ qualitative, ~~and/or~~ transmission rate scalability, ~~and/or~~ scalability by region of interest.

47. (Currently Amended) The process according to claim 30, further comprising progressively descrambling wherein the modified digital stream is ~~progressively descrambled~~ with different levels of at least one of quality, ~~and/or~~ resolution, ~~and/or~~ frame rate, ~~or~~ and/or according to a region of interest via sending a part of the complementary information corresponding to layers of at least one of qualitative, ~~and/or~~ spatial ~~and/or~~ temporal scalability ~~and/or~~ scalability for a region of interest.

48. (Currently Amended) The process according to claim 30, further comprising partially descrambling wherein the modified stream is ~~partially descrambled~~ according to different levels of at least one of quality, ~~and/or~~ resolution, ~~and/or~~ frame rate, ~~and/or~~ or according to a region of interest via sending a part of the complementary information corresponding to a layer or layers of at least one of qualitative, ~~and/or~~ spatial, ~~and/or~~ temporal scalability ~~and/or~~ scalability for this region of interest.

49. (Currently Amended) The process according to claim 30, further comprising synthesizing wherein a synthesis of ~~at the~~ digital stream in the digital stream ~~an original~~ format is ~~calculated in the client~~ addressed equipment as a function of the modified ~~main~~ digital stream and the complementary information.

50. (Currently Amended) The process according to claim 30, further comprising realizing ~~wherein~~ transmission of the modified ~~digital~~main stream ~~is realized~~ via a physically distributed material support.

51. (Currently Amended) The process according to claim 30, wherein the modified ~~digital~~main stream undergoes operations of at least one of transcoding, rearrangement ~~and/or~~ extraction of frames or groups of frames during transmission.

52. (Currently Amended) The process according to claim 30, ~~wherein~~ further comprising realizing transmission of the complementary information ~~is realized~~ via a physically distributed support material.

53. (Currently Amended) The process according to claim 30, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and

further comprising reversibly modifying the ~~modification of~~ wavelet coefficients ~~is~~ reversible and further comprising reconstituting a digital stream reconstituted from the modified ~~main~~digital stream and from the complementary information, wherein the reconstituted digital stream is identical to the ~~original~~ digital stream.

54. (Currently Amended) The process according to claim 30, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and

further comprising reversibly modifying the ~~modification of~~ wavelet coefficients ~~is~~ reversible and further comprising reconstituting a portion of the digital stream reconstituted from the modified ~~main~~digital stream and from the complementary information, wherein the reconstituted digital stream is identical to a corresponding portion in ~~the~~ the digital-original stream.

55. (Currently Amended) The process according to claim 53, ~~wherein further comprising reconstituting reconstitution of a descrambled video stream, wherein the reconstituting is at least controlled and/or limited in terms of at least one of a predefined frame rate, and/or resolution, and/or transmission rate, and/or quality as a function of rights of a user.~~

56. (Currently Amended) The process according to claim 54, further comprising reconstituting ~~wherein reconstitution of a descrambled video stream, wherein the reconstituting is at least controlled and/or limited in terms of at least one of predefined frame rate, and/or resolution, and/or transmission rate, and/or quality as a function of rights of a user.~~

57. (Currently Amended) The process according to claim 53, further comprising reconstituting ~~wherein reconstitution of a descrambled video stream, wherein the reconstituting is at least controlled and/or limited in terms of at least one of predefined frame rate, and/or resolution, and/or transmission rate, and/or quality as a function of viewing apparatus on which it is visualized.~~

58. (Currently Amended) The process according to claim 54, further comprising reconstituting ~~wherein reconstitution of a descrambled video stream, wherein the reconstituting is at least controlled and/or limited in terms of at least one of predefined frame rate, and/or resolution, and/or transmission rate, and/or quality as a function of viewing apparatus on which it is visualized.~~

59. (Currently Amended) The process according to claim 53, ~~wherein further comprising reconstituting reconstitution of a descrambled video stream is carried out in a progressive manner in stages under which reconstitution of the original video digital stream is achieved.~~

60. (Currently Amended) The process according to claim 54, further comprising reconstituting ~~wherein reconstitution of a descrambled video stream is carried out in a~~

progressive manner in stages under which reconstitution of the ~~original video~~digital stream is achieved.

61. (Currently Amended) A system for fabricating a video stream ~~that runs the process according to claim 30~~, comprising:

at least one multimedia server ~~containing original video sequences~~configured to separate

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~~a device for analyzing the video stream;~~

~~a device for separating the an original video stream, formed of video sequences in a digital stream format derived from encoding using wavelets, -into a modified digital main stream by deletion and replacement of~~replacing selected information ~~coding the original visual signal and into complementary information using the selected information as a function of this analysis;~~ and

at least one ~~device in client~~addressed equipment for to receive the modified digital stream and the complementary information separately from the server and to reconstruct~~reeconstruction~~ of the original video stream as a function of the modified ~~main~~digital stream and the complementary information.

62. (New) An apparatus, comprising:

a module configured to separate an original video stream, formed of video sequences in a digital stream format derived from encoding using wavelets, into a modified digital stream by replacing selected information and into complementary information including the selected information, the complementary information being suitable for permitting reconstruction of the digital stream using the modified digital stream; and

a transmission unit to transmit the modified digital stream and the complementary information to at least one client equipment, separately, to permit reconstruction of the original video stream as a function of the modified digital stream and the complementary information.

63. (New) An article of manufacture including a computer readable medium having instructions stored thereon that, if executed on a computing device, cause the computing device to perform a method comprising:

processing a digital stream, formed of video sequences in a digital stream format derived from encoding using wavelets, prior to transmission to client equipment, to generate a modified digital stream by replacement of selected information in the digital stream, the modified digital stream having the digital stream format, and to generate complementary information of any format using the selected information, the complementary information being suitable for permitting reconstruction of the digital stream using the modified digital stream; and

transmitting the modified digital stream and the complementary information separately from a server to the client equipment.

64. (New) The article according to claim 63, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and

wherein the processing comprises scrambling including modifying the coefficients of wavelets belonging to at least one temporal subband resulting from temporal analysis.

65. (New) The article according to claim 63, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and

wherein the processing comprises scrambling including modifying the wavelet coefficients belonging to at least one spatial subband resulting from spatial analysis of a temporal subband.

66. (New) The article according to claim 63, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and

wherein the processing comprises scrambling including modifying the coefficients of wavelets belonging to at least one temporal subband resulting from temporal analysis of one spatial subband.

67. (New) The article according to claim 63, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and wherein the method further comprises modifying wavelet coefficients at least randomly selected or defined a priori.

68. (New) The article according to claim 63, wherein the processing comprises scrambling, wherein parameters for the scrambling are a function of properties of at least one of temporal scalability, spatial scalability, qualitative scalability, transmission rate scalability or scalability by regions of interest offered by digital streams generated by wavelet-based coders.

69. (New) The article according to claim 63, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and wherein the method further comprises determining visual intensity of degradation of the video sequences by a quantity of modified wavelet coefficients in at least one spatial-temporal subband.

70. (New) The article according to claim 63, wherein the method further comprises determining visual intensity of degradation of the video sequences decoded from the modified digital stream as a function of a position in the original digital stream of modified data, which data represents, according to its positions, values quantified according to different accuracies of wavelet coefficients belonging to a spatial-temporal subband.

71. (New) The article according to claim 63, wherein the method further comprises determining visual intensity of degradation of the video sequences decoded from the modified digital stream according to which quality layer of modified wavelet coefficients the video sequences belong to in at least one spatial-temporal subband.

72. (New) The article according to claim 63, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and wherein the method further comprises modifying wavelet coefficients in a binary stream.

73. (New) The article according to claim 72, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and wherein the method further comprises modifying wavelet coefficients with a partial decoding.

74. (New) The article according to claim 72, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and wherein the method further comprises modifying wavelet coefficients during coding or by a decoding then a complete re-encoding.

75. (New) The article according to claim 63, wherein a size of the modified digital stream is identical to the size of the original digital stream.

76. (New) The article according to claim 63, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and wherein the method further comprises substituting the wavelet coefficients with random or calculated values.

77. (New) The article according to claim 63, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and wherein the method further comprises determining a duration of visual scrambling obtained in a group of frames as a function of a temporal subband to which modified wavelet coefficients belong.

78. (New) The article according to claim 63, wherein the method further comprises spatially limiting visual scrambling obtained in a group of frames in a region of interest of at least one frame.

79. (New) The article according to claim 63, wherein the method further comprises organizing the complementary information in layers of at least one of temporal, spatial, qualitative, transmission rate scalability, or scalability by region of interest.

80. (New) The article according to claim 63, wherein the method further comprises progressively descrambling the modified digital stream with different levels of at least one of quality, resolution, frame rate, or according to a region of interest via sending a part of the complementary information corresponding to layers of at least one of qualitative, spatial temporal scalability or scalability for a region of interest.

81. (New) The article according to claim 63, wherein the method further comprises partially descrambling the modified stream according to different levels of at least one of quality, resolution, frame rate, or according to a region of interest via sending a part of the complementary information corresponding to a layer or layers of at least one of qualitative, spatial, temporal scalability or scalability for this region of interest.

82. (New) The article according to claim 63, wherein the method further comprises synthesizing the digital stream in the digital steam format in the client equipment as a function of the modified digital stream and the complementary information.

83. (New) The article according to claim 63, wherein the method further comprises realizing transmission of the modified digital stream via a physically distributed material support.

84. (New) The article according to claim 63, wherein the modified digital stream undergoes operations of at least one of transcoding, rearrangement or extraction of frames or groups of frames during transmission.

85. (New) The article according to claim 63, wherein the method further comprises realizing transmission of the complementary information via a physically distributed support material.

86. (New) The article according to claim 63, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and

wherein the method further comprises reversibly modifying the wavelet coefficients and further comprising reconstituting a digital stream from the modified digital stream and from the complementary information, wherein the reconstituted digital stream is identical to the digital stream.

87. (New) The article according to claim 63, wherein the wavelets comprise frames including blocks that further include coefficients of wavelets describing visual elements, and

wherein the method further comprises reversibly modifying the wavelet coefficients and further comprising reconstituting a portion of the digital stream from the modified digital stream and from the complementary information, wherein the reconstituted digital stream is identical to a corresponding portion in the digital stream.

88. (New) The article according to claim 63, wherein the method further comprises reconstituting a descrambled video stream, wherein the reconstituting is at least controlled or limited in terms of at least one of a predefined frame rate, resolution, transmission rate, or quality as a function of rights of a user.

89. (New) The article according to claim 63, wherein the method further comprises reconstituting a descrambled video stream, wherein the reconstituting is at least controlled or

limited in terms of at least one of predefined frame rate, resolution, transmission rate, or quality as a function of rights of a user.

90. (New) The article according to claim 63, wherein the method further comprises reconstituting a descrambled video stream, wherein the reconstituting is at least controlled or limited in terms of at least one of predefined frame rate, resolution, transmission rate, or quality as a function of viewing apparatus on which it is visualized.

91. (New) The article according to claim 63, wherein the method further comprises reconstituting a descrambled video stream, wherein the reconstituting is at least controlled or limited in terms of at least one of predefined frame rate, resolution, transmission rate, or quality as a function of viewing apparatus on which it is visualized.

92. (New) The article according to claim 63, wherein the method further comprises reconstituting a descrambled video stream in a progressive manner in stages under which reconstitution of the digital stream is achieved.

93. (New) The article according to claim 63, wherein the method further comprises reconstituting a descrambled video stream in a progressive manner in stages under which reconstitution of the digital stream is achieved.